19 INCH FLAT PANEL LCD TFT MONITOR

USER'S MANUAL

MSN 2001 8194

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SAFETY AND PRECAUTIONS

Please read through this section carefully and follow the instructions to maximize the reliable operation and lifetime of your LCD monitor. Always keep these instructions handy and close by your LCD monitor. Keep the instructions and the packaging so that if you sell or give away your LCD monitor you can give them to the new owner.

OPERATING SAFETY

- **Never open the housing** of the LCD monitor/power supply! When the housing is open there is a **danger of injury** from electric shock!

- Do not insert **any objects** through the slots and openings of the monitor. This may lead to an electrical short-circuit or even fire resulting in damage to your LCD monitor.

- Slots and openings in the LCD monitor are for ventilation purpose. **Do not cover these openings,** as this may lead to overheating.

- Do not allow **children** to play **unattended** with electrical equipment. Children may not always correctly recognize danger.
- This LCD monitor is intended for personal use only. It **not** intended for commercial use in **a heavy industry environment**.
- An **injury hazard** exists when the **display breaks**. Wear protective gloves to pack the broken parts and send them into your service center for proper **disposal.** Then wash your hands with soap, because it is possible for **chemicals** to escape**.**
- Never exert pressure on the display. This could break the monitor.

- Do not touch the display with your fingers or with sharp objects to avoid damage.

Contact the Call Center immediately in any of the following situations. Do NOT plug in or turn on your monitor:

- ♦ if the power cable/power supply overheats or is damaged
- ♦ if liquid has gotten into the monitor
- ♦ if the LCD monitor is dropped or the housing damaged

REPAIR

- Leave all repairs of your LCD monitor to **authorized and qualified personnel** only.
- Should a repair be necessary, please contact one of our authorized **service partners** only.

NOTES FOR SERVICE ENGINEERS

- Before opening the housing, **disconnect the monitor from all power sources and remove any connecting cables**. If the monitor has not been disconnected from the power outlet before being opened, there is a **danger to life** through electric shock. There is also a risk of damage to the components.
- Internal components of the LCD monitor may be damaged by **electrostatic discharge** (ESD). Carry out repairs in an **ESD-protected workshop**. If no such workshop is available, wear an **antistatic wrist strap** or touch a highly conductive metal object. We can repair damage sustained by inappropriate handling for a fee.
- Use only **original spare parts**.

POINT OF USE

- Keep your LCD monitor and all units connected to it away from **moisture** and avoid **dust**, **heat** and **direct sunlight**. Failure to observe these instructions can lead to malfunctions or damage to the LCD monitor**.**
- Place and operate all units on **a stable, level** and **vibration-free surface** in order to avoid the LCD monitor from falling.

ENVIRONMENTAL CONDITIONS

- The LCD monitor can be operated most reliably at ambient temperatures between **+41°F** and **+95°F** (5° C to 35° C) and at a relative humidity between 20% and 85% (without condensation).
- When switched off, the monitor can be stored most reliably between **-4°F** and **+140°F** (-20° C - +60° C), up to the maximum height of 39,000 ft (12,000 m) above sea level at a relative humidity between 10% and 85% (without condensation).
- After transporting your LCD monitor please wait until it has assumed the ambient temperature before connecting and switching it on. Extremely high variations in the temperature or humidity may result in **condensation** forming on the inside of the LCD monitor which could cause an **electrical short-circuit.**

CONNECTING

Observe the following instructions to connect your LCD monitor properly:

POWER SUPPLY

- Do not open the power supply housing. An open housing presents a **lethal hazard** from electrical shock. There are no parts inside to be cleaned or serviced.

- Operate your LCD monitor only with grounded outlets with **AC 100-240V~/ 50-60 Hz.** If you are not sure about the power supply at your location, check with your power company. (Mains/Power Supply = **HASU05K**)
- Use only the power supply and power connection cable **provided.**
- For additional safety we recommend use of **a surge protector** to protect your LCD monitor from damage resulting from **voltage surges** or **lightning**.
- To remove the LCD monitor from the power supply, disconnect the plug from the AC outlet.
- The power **outlet** must be in the vicinity of your LCD monitor and within reach of the power cables. **DO NOT stretch the power cables tightly to reach a power outlet**.
- You should arrange the LCD monitor cables in a manner that no one can trip over or step on them.
- To avoid damage of cable **do not place any objects or furniture on the cable**.
- You can adjust your LCD monitor a **maximum of about 3° downward** and a **maximal 20° upward** (see page 14). If you attempt to force the monitor further, you may **damage** your monitor.

STANDARDS/ELECTRO-MAGNETIC INTERFERENCE

Your monitor fulfils the requirements for electro-magnetic compatibility and electrical safety specified in the following standards:

EN 55022, EN 55024, EN 60950, EN 61000-3-2, EN 61000-3-3
UL60950 / CAN CSA 22.2 No 60950, FCC

- When connecting ensure that *Guidelines for Electro-Magnetic Interference* **(EMI)** are observed.
- Provide a space of at least three feet from **high-frequency and magnetic sources of interference** (television sets, loudspeakers, mobile telephones, etc.) in order to avoid malfunctions.

ERGONOMICS

- This monitor complies with all relevant regulations such as DIN EN ISO 9241-3, DIN EN ISO 9241-7 and DIN EN ISO 9241-8.
- For ergonomic reasons we suggest not to use dark text with a blue background. This would cause bad readability and would increase eye strain.
- While working with monitors you should **take breaks periodically** to avoid tension and fatigue.
- In order to protect your eyes and to create a pleasant working area you should **avoid glare, reflections** and **strong contrasts** on the screen. For more detailed information on workplace ergonomics, see page 16.

ELECTRICAL SAFETY

EN 60950	Safety of information technology equipment.

- The connection of devices is limited to equipment that complies with EN60950 "Safety of information technology equipment" or EN60065 "Audio, video and similar electronic apparatus. Safety requirements"
- For U.S./Canadian purposes:
  The LCD should only be connected to equipment which complies with UL 60950/CAN CSA 22.2 No 60950

TRANSPORT AND RECYCLING

- Keep the original packaging and use it to protect the LCD monitor during transport or storage.

PRECAUTIONS

> ➲ **Caution!** There are **no parts which can be serviced** or cleaned inside of the monitor housing.

You can increase the life of your LCD monitor by taking the following precautions:

- Before cleaning **always disconnect the power line** and all connection cables.
- Do **not use any solvents**, caustic or gaseous cleaning agents.
- Clean the display with a soft, lint-free cloth.
- Ensure that no water droplets remain on the screen. Water can cause **permanent discoloration**.
- Do not expose the screen to **bright sunlight** or **ultraviolet radiation**.

IMPORTANT ADDITIONAL SAFETY INSTRUCTIONS

When using any electronic equipment, basic safety precautions should always be taken. Following the guidelines below can reduce the risk of fire, electric shock and injury to person:

- Do not use this product near water (e.g., near a bathtub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool).
- Avoid using a telephone/modem (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
- Do not use the telephone/modem to report a gas leak in the vicinity of the leak.
- Use only the power cord indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.
- Keep batteries away from children at all times.

FCC COMPLIANCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. Shielded interface cables, if any, must be used in order to comply with the emission limits.

DECLARATION OF CONFORMITY

According to 47CFR, Parts 2 and 15 for Class B Personal Computers:

We: **Medion Aktiengesellschaft**
(Name of the Responsible Party)

Located at: **Gänsemarkt 16 – 18**
D-45127 Essen
Germany
(Address, City, State, Zip Code)

Fax : 0 201 / 81 081 – 227
(Facsimile Number **for conformity issues only**)

Declare under sole responsibility that the product identified herein, complies with 47CFR Parts 2 and 15 of the FCC rules as a Class B digital device. Each product marketed, is identical to the representative unit tested and found to be compliant with the standards. Records maintained continue to reflect the equipment being produced can be expected to be within the variation accepted, due to quantity production and testing on a statistical basis as required by 47CFR §2.909. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation. The above named party is responsible for ensuring that the equipment complies with the standards of 47CFR §§15.101 to 15.109.

Trade Name: **Medion**

Type or
Model Number: **MD 7212 AS**

Party Responsible: **MEDION AG**

Executed on (Date), at (Place): **20th of May 2003, Essen**

INTRODUCTION

Thank you for purchasing our LCD display. We thank you for your confidence in our products and are pleased to greet you as a new customer.

We focused on great features, ease of use and reliability in manufacturing your LCD monitor.

SERVICE

Your monitor comes with a one-year limited warranty and toll-free customer support. Please see the limited warranty card included with your monitor for details.

This manual contains a separate chapter on the subject of service beginning on page 20.

PERFORMANCE CHARACTERISTICS

Advantages in relation to CRT (cathode ray tube) monitors:

- Less space required
- Lower weight
- Power savings

High image quality

- SXGA standard: resolution up to 1280 x 1024
- Over 16 million colors

Further features

- The LCD monitor is a plug and play device which is automatically recognized by your operating system.
- The power management fulfills the VESA DPMS standard. During idle times (OFF mode) the power consumption is automatically reduced by up to 95%.

➲ Before start-up read the Chapter "***Safety and Precautions***" starting on page 1ff.

PREPARE YOUR COMPUTER

If you have previously used your computer with a CRT monitor, you will need to make sure that your computer's display settings are supported by your LCD monitor. The following pages describe how to verify and change your display settings.

SUPPORTED MONITOR SETTINGS

Resolution	Horizontal Frequency	Vertical Frequency
640 x 480	31.5 KHz	60.0 Hz
640 x 480	35.0 KHz	66.7 Hz
640 x 480	37.8 KHz	72.8 Hz
640 x 480	37.5 KHz	75.0 Hz
640 x 350	31.5 KHz	70.1 Hz
720 x 400	31.5 KHz	70.1 Hz
800 x 600	35.2 KHz	56.3 Hz
800 x 600	37.9 KHz	60.3 Hz
800 x 600	48.1 KHz	72.0 Hz
800 x 600	46.9 KHz	75.0 Hz
832 x 624	49.7 KHz	74.6 Hz
1024 x 768	48.4 KHz	60.0 Hz
1024 x 768	56.5 KHz	70.1 Hz
1024 x 768	60.0 KHz	75.0 Hz
1280 x 1024*	63.9 KHz	60.0 Hz
1280 x 1024	79.9 KHz	75.0 Hz

*recommended resolution (physical)

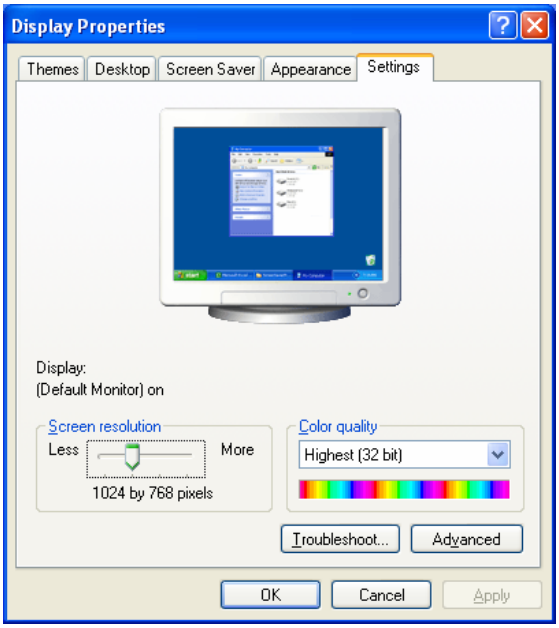
DISPLAY PROPERTIES

This Windows feature allows you to change your display settings. To access Display Properties:

1. Right mouse click (press and release the right mouse button) anywhere on the Windows desktop. A short menu will appear.

2. Left mouse click on **Properties** at the bottom of this menu.

3. Click the **Settings** tab at the top of the dialog box.



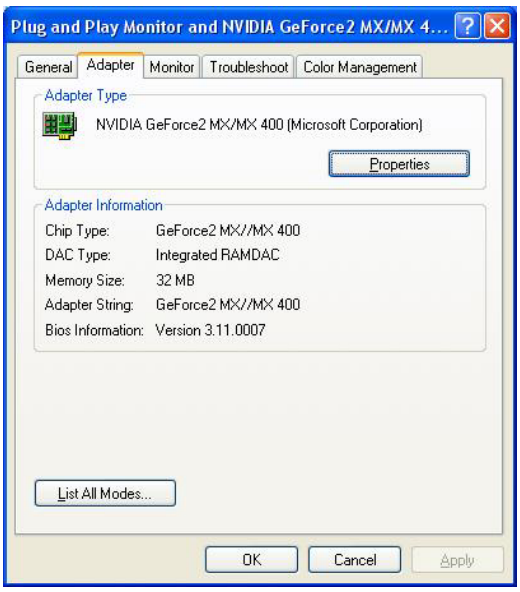
(Diagram the same)

Color quality sets the color depth (number of colors displayed). Your monitor supports a maximum color depth of 16 million colors corresponding to 32 bit or "Real Color".

Screen resolution sets the resolution of your display. Your monitor can display a maximum of 1280 x 1024 pixels. This is also the physical resolution of your display. Using the physical resolution is recommended as it allows TFT monitors to achieve optimal picture quality.

Clicking the ***Advanced*** button brings up another window where you can further adjust settings such as the refresh rate. The specific options in this window will depend on your video card and the configuration of your computer.

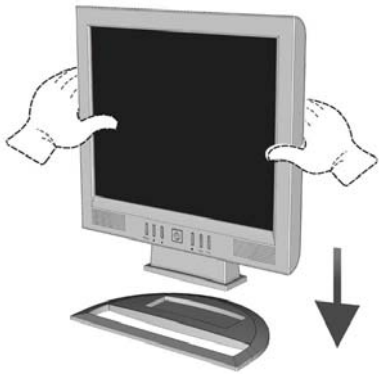
For most Medion computers, click the ***Adapter*** tab at the top of the dialog box. Then you can change the resolution and refresh rate by clicking "**List All Modes...**".



(Your screen may be different from the one shown above.)

➲ **Caution!** If your display settings exceed the capabilities of your monitor, your monitor may show only a blank display. The value for the LCD should be 60 Hz and, depending on the setting, not exceed 75 Hz. If your display goes blank, see the information on Troubleshooting on page 20.

FIXING THE MONITOR BASE

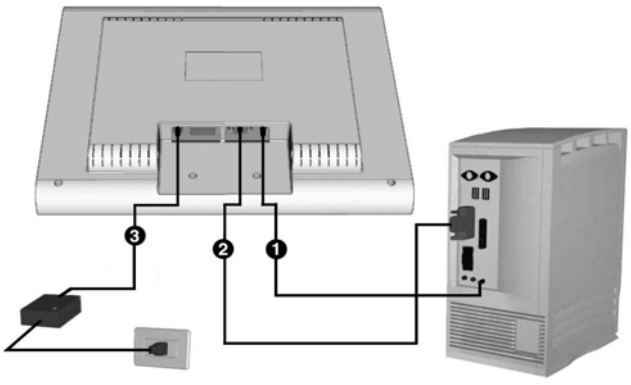


(Diagram the same)

CONNECTING THE MONITOR

To start using the LCD monitor straight away, please read the "**Safety and Precautions**" section (page 1).

We recommend that you also read all the other sections as these contain detailed explanations and tips on how to use your LCD display.



- Ensure that the LCD monitor is not yet plugged in and neither the LCD monitor nor the computer is switched on.
- Prepare your computer for the LCD monitor if necessary (see previous pages) with the correct settings for your LCD.

❶ CONNECT THE AUDIO CABLE (OPTIONAL)

- Plug the audio cable into the matching ports on the computer and on the monitor. This should be "audio out", "line out" or "speaker" on your computer.

❷ CONNECT THE VGA SIGNAL CABLE

- Plug the signal cable into the matching VGA port on the computer.

❸ CONNECTING THE POWER SUPPLY

- Connect the power cable to the power pack and plug into an AC outlet in the vicinity of the LCD.
- Plug the power supply cable from the power pack into the power supply socket on the LCD monitor.
- Switch on your display monitor with the ON/OFF switch (see page 17).
- Then switch on your computer.

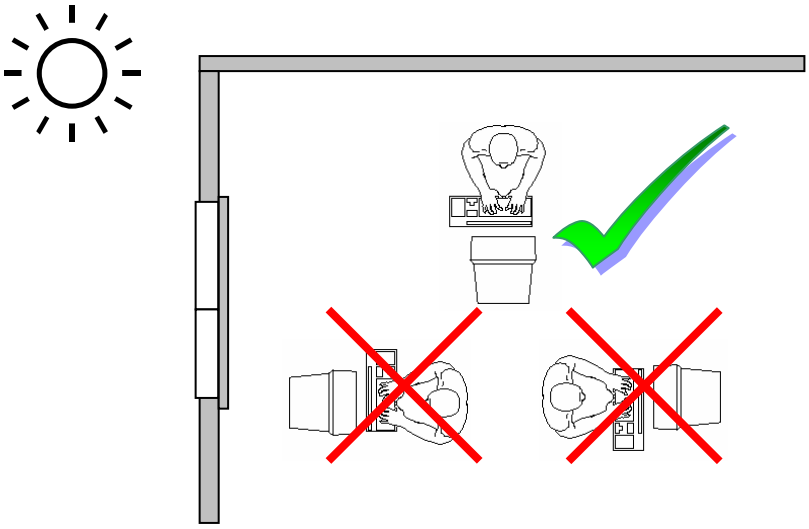
ADJUSTING THE SCREEN POSITION

Adjust the LCD screen according to your working environment. Your LCD screen is designed so that you can find the viewing angle that suits you best.

You can adjust your LCD monitor a maximum of about 5° downward and a maximum of 20° upward. If you attempt to force the monitor further, you may damage your monitor.

POSITIONING OF THE MONITOR

Please ensure that the monitor is set up in such a way that that reflections, glare and light-dark contrast are avoided.



YOUR POSTURE

Sitting in one position for long periods can be uncomfortable. To minimize the potential for physical discomfort or injury, it's important that you maintain proper posture.

Back - While sitting at your work surface, make sure your back is supported by the chair's backrest in an erect position or angled slightly backwards.

Arms - Your arms should be relaxed and loose, elbows close to your sides, with forearms and hands approximately parallel to the floor.

Wrists - Your wrists should be as straight as possible while using the keyboard, mouse or trackball. They should not be bent sideways, or more than 10 degrees up or down.

Head - Your head should be upright or tilted slightly forward. Avoid working with your head or trunk twisted.

Legs - Your thighs should be horizontal or angled slightly downward. Your lower legs should be near a right angle to your thighs.

Your feet should rest flat on the floor. If necessary, use a footrest, but double check that you have your seat height adjusted correctly before getting a footrest.

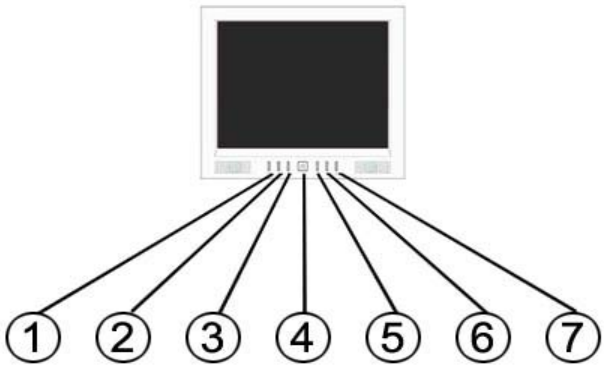
Overall - Change your position frequently and take regular breaks to avoid fatigue.

WORKING ERGONOMICS

- Hand's support rest: 2" – 4"
- Top line of screen should be at eye level or a little beneath
- Eye's distance to screen: 20" – 28"
- Legroom (vertical): at least 26"
- Legroom (horizontal): at least 24"

The illustration above should give you a guideline for an ergonomic workplace.

CONTROLS



(1) **Menu**
When this key is pressed the OSD (ON screen display) starts on your LCD monitor.

(2) ◂ **Function selection key**
With this key you can select the parameter whose value you want to change.

(3) ▸ **Function selection key**
With this key you can select the parameter whose value you want to change.

(4) **ON/OFF switch & Operation indicator**
With this switch you can switch the LCD monitor ON and OFF.
Indicates the operating state.

(5) **Auto**
With this key you can automatically adjust the image.

(6)
With this key you can switch the internal speakers off.

(7) **Exit OSD**

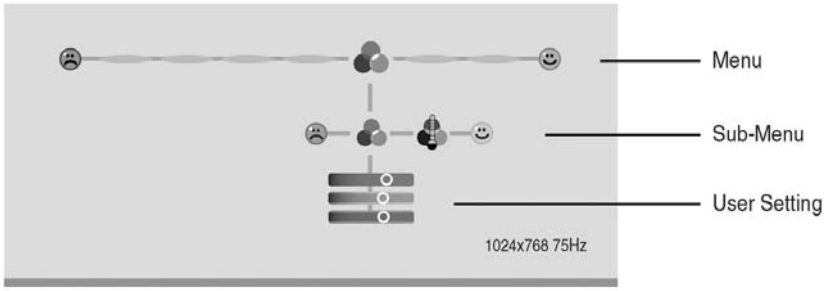
SETTING THE LCD MONITOR

You can set certain parameters for the LCD monitor on the OSD menu (ON screen display).

AUTO SETUP

1. Before changing other settings using the OSD menu, you must first perform an auto setup. It is best to perform the auto set up while the screen is displaying black text on a white background (e.g., a Word document).
2. Press **Auto** to select Auto Setup. This will automatically choose optimal settings for your monitor.

OSD MENU (ON SCREEN DISPLAY)



Press **menu** (see (1), page 17) to activate the OSD.

1. Select the options from the main menu with the ◂ or ▸ **function selection keys**.
2. Press **menu** to activate the sub-menu.
3. Select the options from the sub-menu with the ◂ or ▸ **function selection keys**.
4. Press **menu** to start the adjustment possibility.
5. Set the desired value with the ◂ or ▸ **function selection keys**.
6. Press **exit** to deactivate OSD.

The main functions and adjustment possibilities using the OSD are explained on the next pages.

➲ **Caution!** Changing settings for your LCD monitor may result in only slight changes in the display due to the limitations of the technology.

Main Menu	Sub-Menu	Function
		All reset
		Auto Adjust
		Reset Color
		Reset OSD
		Mute
		Volume
		Brightness
		Contrast
		RGB Adjust
		Color Temperature
		Clock Adjust
		Phase Adjust
		H-Position
		V-Position
		OSD Time Out
		OSD Position
		Accept and Exit
		Reject and Exit

TROUBLESHOOTING

Many times, problems have simple causes. We would like to give you some tips to solve some common problems. Should these tips not help, please call us!

CHECK CONNECTIONS AND CABLES

Start by carefully checking all cable connections visually. If the indicator lamps do not function, ensure that the LCD monitor and computer are properly connected to the a working power outlet.

TROUBLESHOOTING

It can be difficult to check some of the settings listed below if your display is blank! In order to get an image on your screen so that you can check the settings, it may be necessary to start your computer in **safe mode**.

- **Windows 98/ME**.
  When starting your computer, press F8 before the Windows logo screen appears. Select **Safe Mode**.
- **Windows NT 4**
  When starting your computer, select the boot option with [VGA Mode] at the end.
- **Windows 2000/XP**
  When starting your computer, press F8 before the Windows logo screen appears. Select **Enable VGA** mode.

It may be necessary to reinstall your video driver while in one of these modes in order to reset the resolution and refresh rate.

No display on screen:

Check:

- **Refresh rate frequency**.
  The current image refresh frequency must be suitable for the LCD monitor.
- **Power saving mode**. Press any desired key and move the mouse to deactivate the mode.
- **Signal cable pins.** If pins are bent, please contact your call center.
- Set the appropriate values for your LCD monitor (see **"Prepare your computer",** page 10).

Picture runs or is not stable:

- ❑ **Signal cable pins**. If pins are bent, please contact your call center.
- ❑ **Video card**. Check whether the settings are correct.
- ❑ **Image refresh frequencies**. Select permissible values for your graphic settings.
- ❑ Remove any interfering equipment (portable telephones, loudspeakers, etc.) from the vicinity of your LCD monitor.
- ❑ Avoid using monitor extension cables.

Colors not displayed cleanly:

- ❑ Check the signal cable pins. If pins are bent, please contact your service dealer.
- ❑ Readjust the color settings using the OSD (see page 19).
- ❑ Avoid using monitor extension cables.

The display is too dark or too bright:

- ❑ Check that the video output level of the computer matches the technical data of the monitor.
- ❑ Select Auto-Setup to optimize the brightness and contrast settings (see page 18).

Characters displayed dark, picture too small, too large or not centered, etc.:

- ❑ Readjust the corresponding settings (see page 18).

The picture jitters:

- ❑ Check that the operating voltage matches the technical data of the monitor.
- ❑ Select Auto-Setup to optimize the settings for pixel and phase synchronization (see page 18).

DO YOU REQUIRE ADDITIONAL SUPPORT?

If the suggestions in the above section have not solved your problem, please contact the call center. We will try and help you over the telephone. However, before you contact your call center, please have the following information available:

- How is your computer configured?
- What additional peripherals do you use?
- What messages, if any, appear on your screen?
- What software were you using when the error occurred?
- What steps have you already undertaken to solve the problem?
- If you have already been given a customer number, please have this available.

SPECIFICATIONS

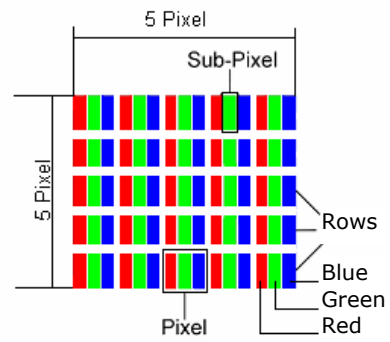
Visible display size	19” (48.26 cm), TFT	
LCD-Monitor: Input voltage Power consumption	 DC 19 V max. 2.5 A max. 47.5 Watt	
Resolution Refresh rate	max. 1280 x 1024 max. 75 Hz	
Brightness	250 cd/m^2 (typ.)	
Contrast	500:1 (typ.)	
Reaction time	25ms (typ.)	
Horizontal/vertical viewing angle	170°/170° (typ.)	
Video input	15-wired SUB-D connector	
User control	ON/OFF, OSD	
Dimensions (W x H x D)	16.93” x 17.32” x 9.02” 430 mm x 440 mm x 229 mm	
Power Supply Voltage Current Frequency	HASU05K IN: AC 100 – AC 240 V ~ max. 1.8 A 50 – 60 Hz	
Voltage Current	Out: DC 19 V max. 2.5 A	
Ambient Temperature	Operating	+41°F ~ +95°F +5°C ~ +35°C
	Storage	-4°F ~ +140°F -20° C ~ +60°C
Humidity	Operating	< 80%
	Storage	< 85%
Speakers	2 x 1 Watt	

PIXEL DEFECTS ON LCDS (TFT-DISPLAYS)

Active matrix LCDs (TFT) with a resolution of 1024 x 768 pixel (XGA), which are in turn composed of three sub-pixels each (red, green, blue), contain about 2.4 million addressable transistors. Because of this very high number of transistors and their extremely complex production process occasionally defective or incorrectly addressed pixels or sub-pixels may occur.
There have been several attempts in the past to define the acceptable number of defective pixels. But this can be difficult and varies widely between different manufacturers.

MEDION, therefore, adheres to the clear and strict requirements of ***ISO 13406-2, class II,*** for the warranty handling of all TFT display products. These requirements are summarized below.

Within ISO-standard 13406-2 the general requirements regarding pixel defects are defined. Pixel defects are classified into three failure types and four failure classes. Each individual pixel is made up of three sub-pixels in the primary colors (red, green, blue).



Types of Pixel Failures:

Type 1: A constantly lit pixel (a bright, white spot), even though it is *not* addressed
A white pixel is caused when all three sub-pixel are lit.

Type 2: A pixel that does not light up (dark, black spot), although it is addressed

Type 3: Abnormal or defective red, green or blue sub-pixels.
(E.g. constantly lit with half the brightness, one color is not shining, blinking or flickering, but not belonging to Type 1 or 2 Pixel Failures)

In addition: A cluster of type 3 (= 2 or more defective sub-pixels in an array of 5 x 5 pixel). A cluster is an array of 5 x 5 pixel (15 x 5 sub-pixel).

Classes of Pixel Failures:

Failure class	Type 1	Type 2	Type 3	Cluster v. Type 3	
I	0	0	0	-	0
II	2	2	5	-	2
III	5	15	50		5
IV	50	150	500		50

The acceptable number of defects of the above mentioned types in each failure class refers to one million pixels and has to be calculated according the physical resolution of the display.

This leads to a maximum *allowed* number in **class II type failure:**

Resolution	Mill. Pixel	SubPixel	Type (s.above)
1024 x 768 (15")	0.786432	2.359296	2 2 4 - 2
1280 x 1024 (17,18, 19")	1.310720	3.932160	3 3 7 - 3
1600 x 1200 (19")	1.920000	5.760000	4 4 10 - 4

Class I type failure only applies to special applications, e.g. medical applications, and results in corresponding price increases. Class II type failure is the established standard for quality conscious manufacturers with high quality displays.

Example 1:

A 15" - XGA-display consists of 1024 horizontal and 768 vertical picture dots (pixel), which amounts to a total of 786,432 pixel. Related to one million pixels this translates into a factor of about 0.8.

Class II type failure consequently allows for two defects each of type 1 and type 2 and 4 defects of type 3 and 2 clusters of type 3.

Example 2:

A 17" - SXGA-display consists of 1280 horizontal and 1024 vertical picture dots (pixel), which amounts to a total of 1,31 million pixels. Based on one million pixels this translates into a factor of about 1.31.
Class II type failure consequently allows for three defects each of type 1 and type 2 and 7 defects of type 3 and 3 cluster of type 3.

These cases are normally not covered by warranty.
If the number of failures exceeds the figures of any category mentioned above then this may be covered by the warranty.